



The Undergraduate Surgery Interest Group (USIG): A New Venue for Premedical Student Exposure to the Field of Surgery



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Background

Early exposure to the field of surgery through workshops, lectures, and mentors may bolster and prolong interest in surgical careers for undergraduate students. Population analyses and dynamic models have predicted significant and increasing surgeon shortages in the coming decade¹⁻³. Providing surgical exposure to pre-medical undergraduates is a unique and imperative approach to creating a future surgical workforce that is more resilient to surgical attrition. An Undergraduate Surgery Interest Group (USIG) was started to provide students with exposure to surgery. This USIG has received advisorship, resources, and support from the University of Minnesota Department of Surgery.

Methods

USIG members worked with the Department of Surgery at the University of Minnesota to develop a constitution defining the objectives and structure of the group, as well as to create officer positions. A faculty advisor was designated by the Chairman of Surgery to aid navigation and networking within the medical school necessary for resources, events, and speakers. USIG leadership then publicized the group through social media, flyers, and various departments within the university to gain membership and participation. Surveys were used to evaluate the value of workshops to members. All statistical analysis was performed using SPSS (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY).

Preparing Tomorrow's Physicians for Excellence in Next-Generation Healthcare

A Teaching Objectives Emphasize Undergraduate Student Interests



B Objectives Accomplished by Immersion in Surgical Environments



C USIG Focuses on Preparation for a Surgical Career



Figure 1. (A) USIG objectives. Centered around conveying core components of surgery to all members. (B) USIG group activities incorporate a diverse repertoire of training for USIG members through various events and workshops. (C) Goals for USIG members.

USIG Organizational Levels

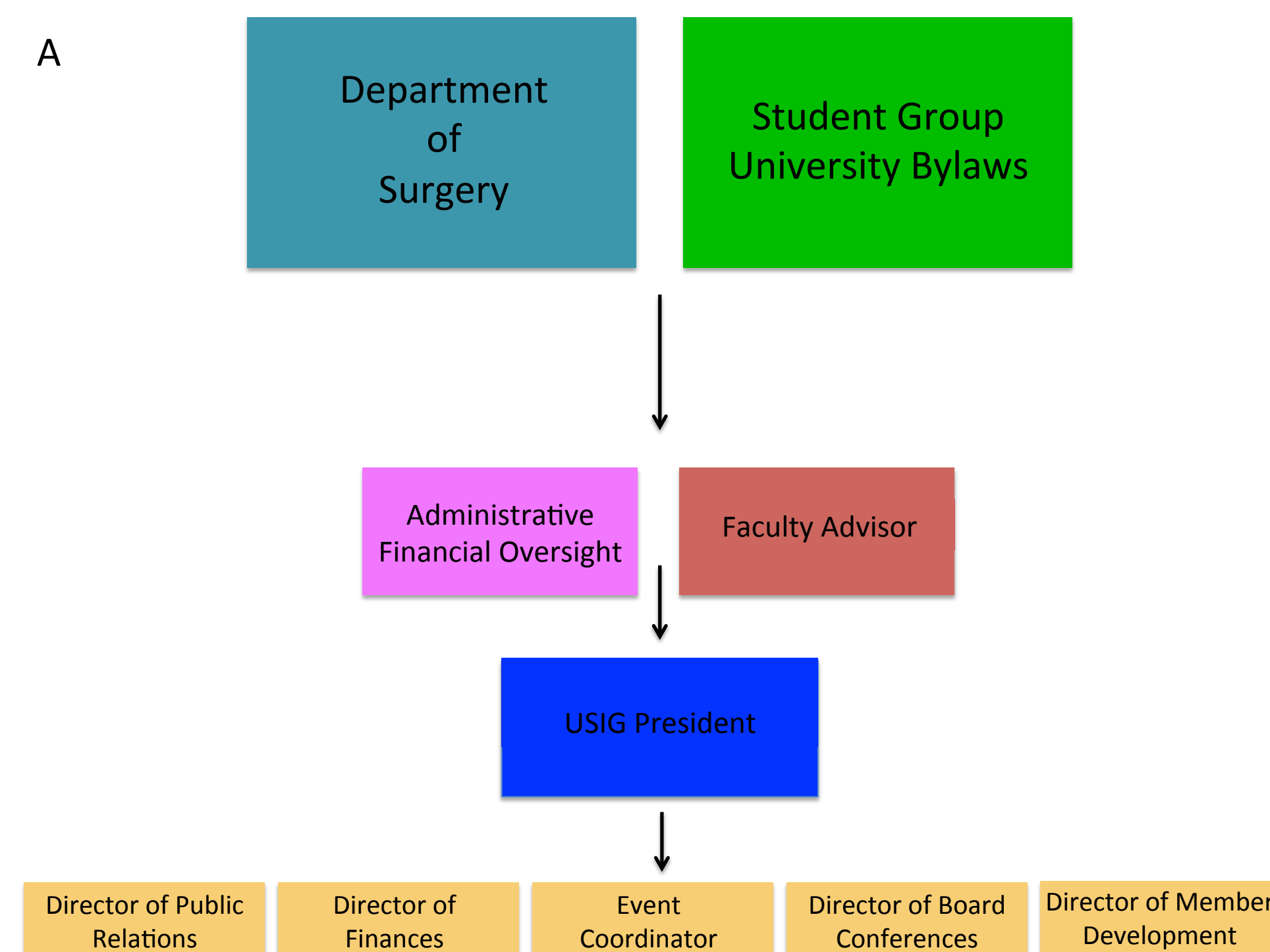


Figure 2. (A) USIG was initiated as a student organization within the Department of Surgery (DOS). A financial account was created for USIG, and all expenses and income are under the auspices of the DOS administration. A surgery faculty advisor served as a resource for the USIG leadership.

Summary of USIG Activity

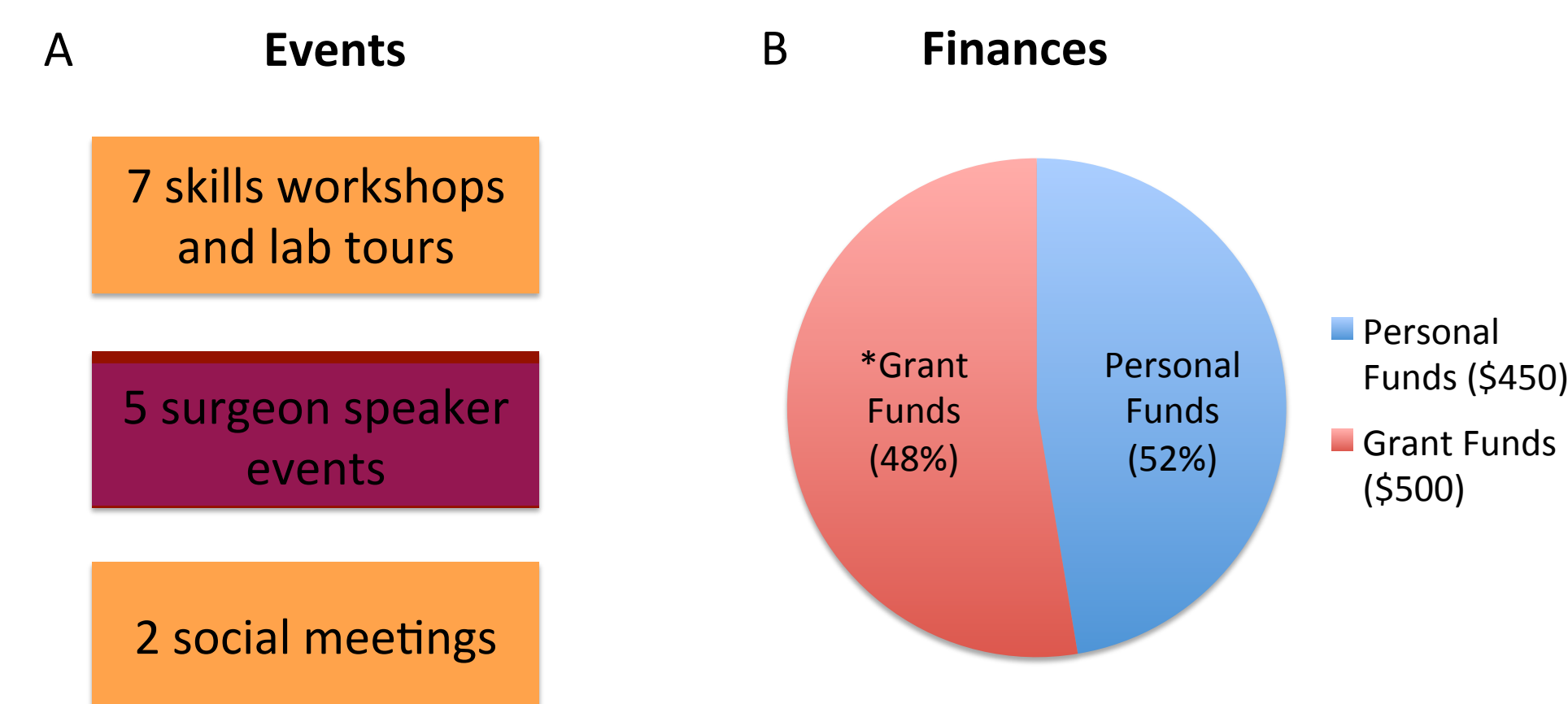


Figure 3. (A) 14 events; skills workshops and lab tours with a surgical simulation center, medical device center, cardiac physiology lab, surgery lab, and historical surgical library. Surgeon speaker events featured vascular surgery, neurosurgery, transplant surgery, general surgery, and pediatric surgery, respectively. (B) USIG Finances. *USIG was accepted in September 2016 to receive \$2760 in grant money that is still processing for events that have not yet taken place.

Surgical Field of Interest Among 40 USIG Members

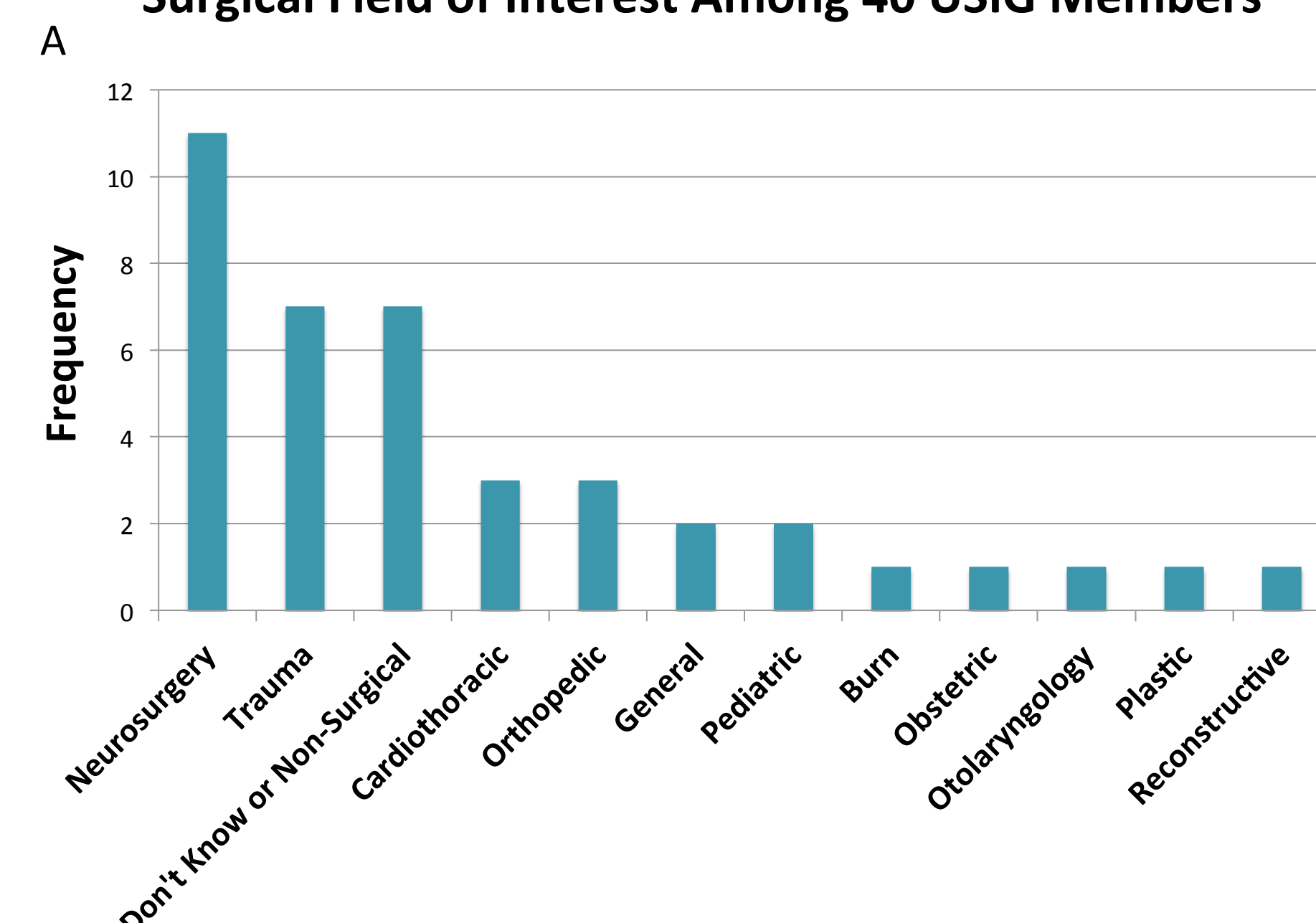


Figure 4. (A) USIG member responses (n=40) to a survey asking if there was a surgical specialty they were particularly interested in. .

Construction and Implementation of a Low Fidelity Surgical Simulation Model for Skills Workshops



Figure 5. Six students assembled thirty-five breast biopsy simulation models from inexpensive materials (<\$4.00 / model) that were used in USIG simulation workshops. USIG participants (n=24) rated their satisfaction of one such workshop as 8.2/10 with a standard deviation of 2.085. (A) Assembly of a breast biopsy simulation model. (B) A completed simulation model. (C) USIG members practice suturing on the models during a simulation workshop.

USIG Trauma Surgical Skills Workshop Significantly Increased Knowledge and Confidence Involving Various Components of Surgery

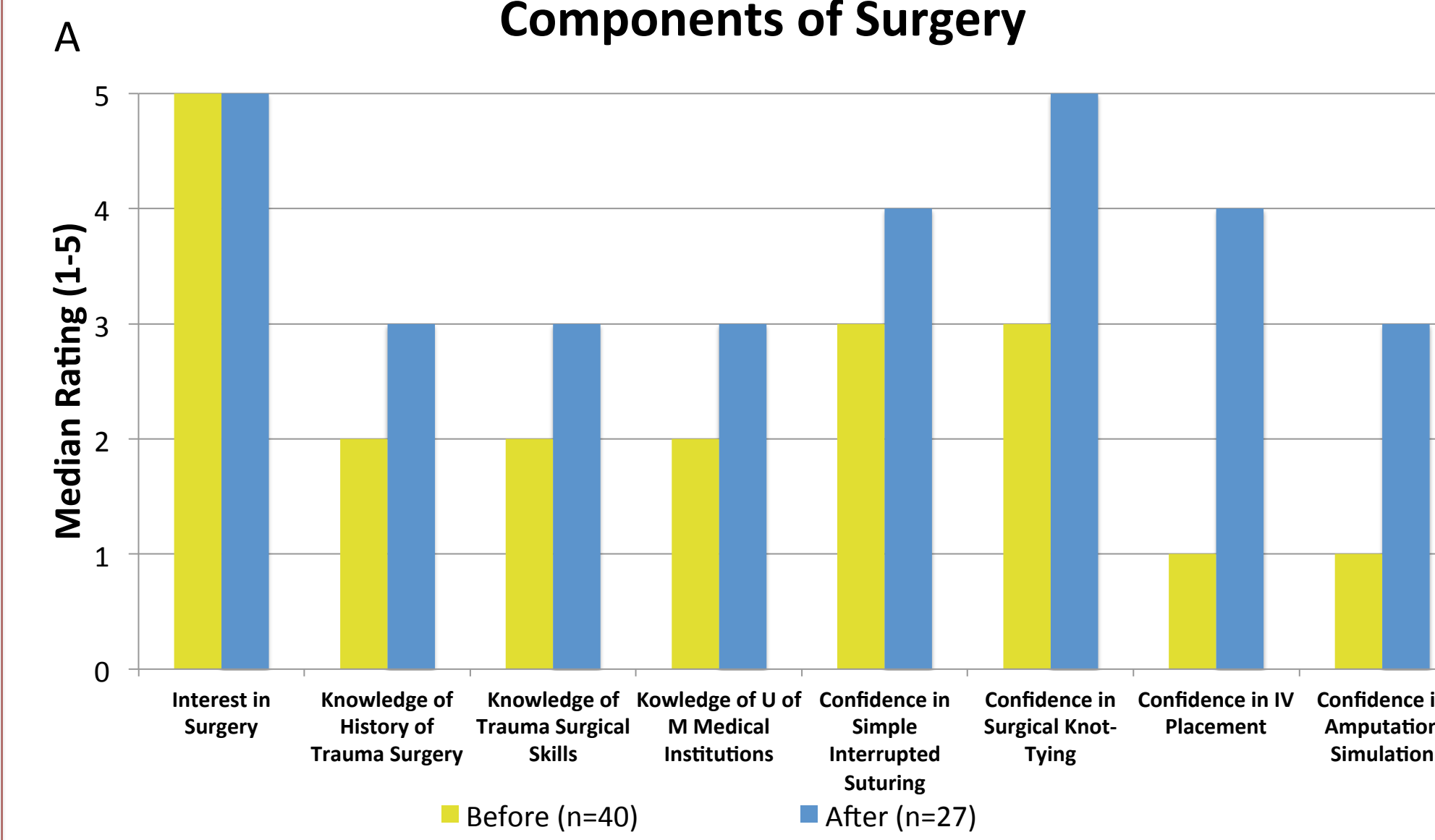


Figure 6. (A) Median self-rated surgical interest, knowledge, and confidence in trauma skills stations before and after the trauma surgical skills event. USIG members (n=40) participated in a trauma workshop: 5 surgical stations - simple interrupted sutures, IV placement, surgical knot-tying, surgical amputation, and history of surgery. Pre- and post-workshop voluntary surveys: self-rated confidence, knowledge on surgical skills, and interest in surgery. Significant differences (p < 0.05) between median pre- and post-survey ratings for each category were identified except for interest in surgery, which did not change between pre- and post-workshop settings (Mann-Whitney U test).

Social Factor Influence on Surgical Interest in Pre-Medical Students

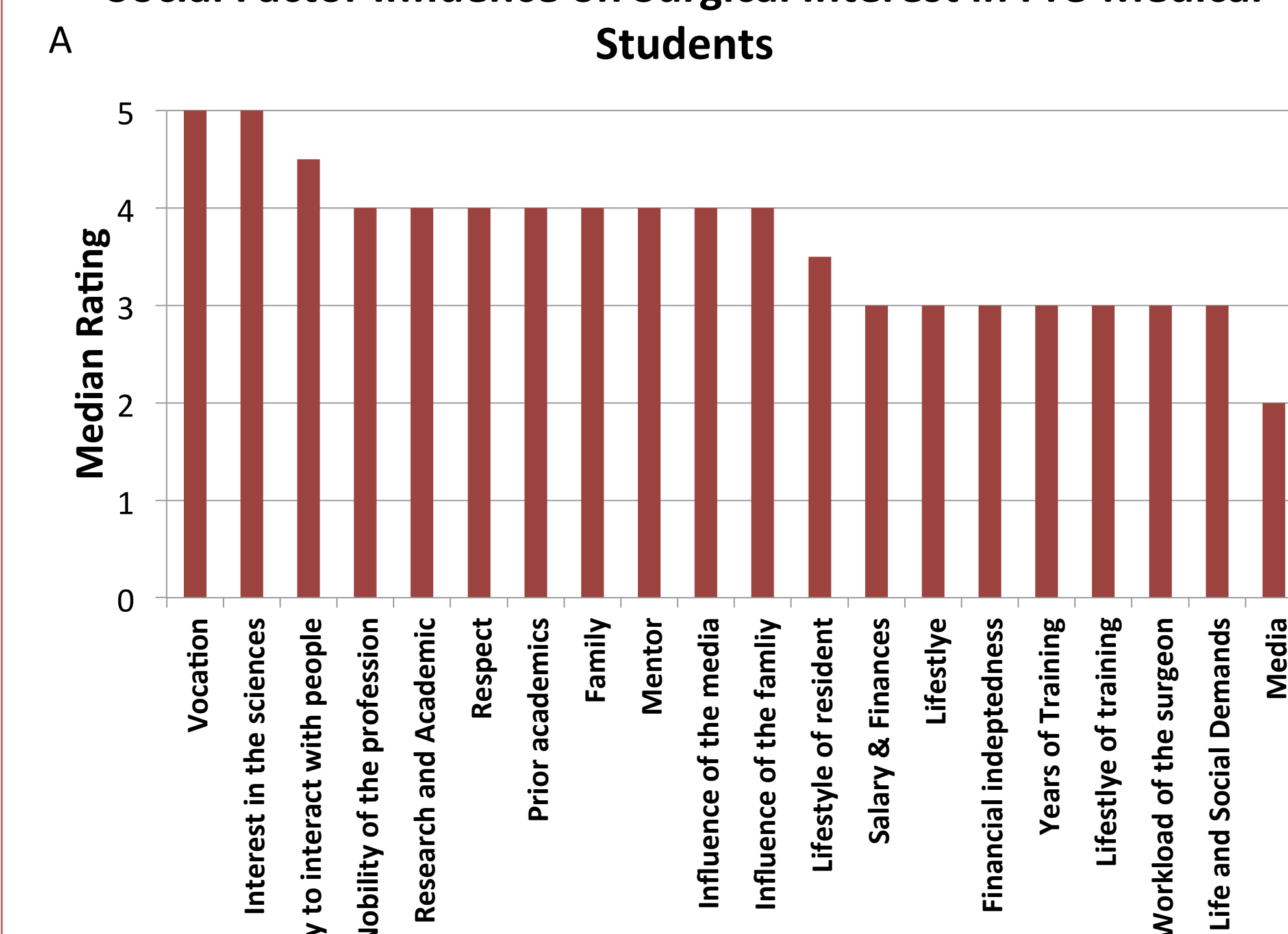


Figure 7. (A) 40 USIG members were asked to rate the influence that each of the displayed social factors had on their perceptions of a possible career in surgery, where a rating of '1' corresponded to a highly negative influence, and a rating of '5' corresponded to a highly positive influence.

Website and Social Media Boost Effectiveness and Outreach of USIG

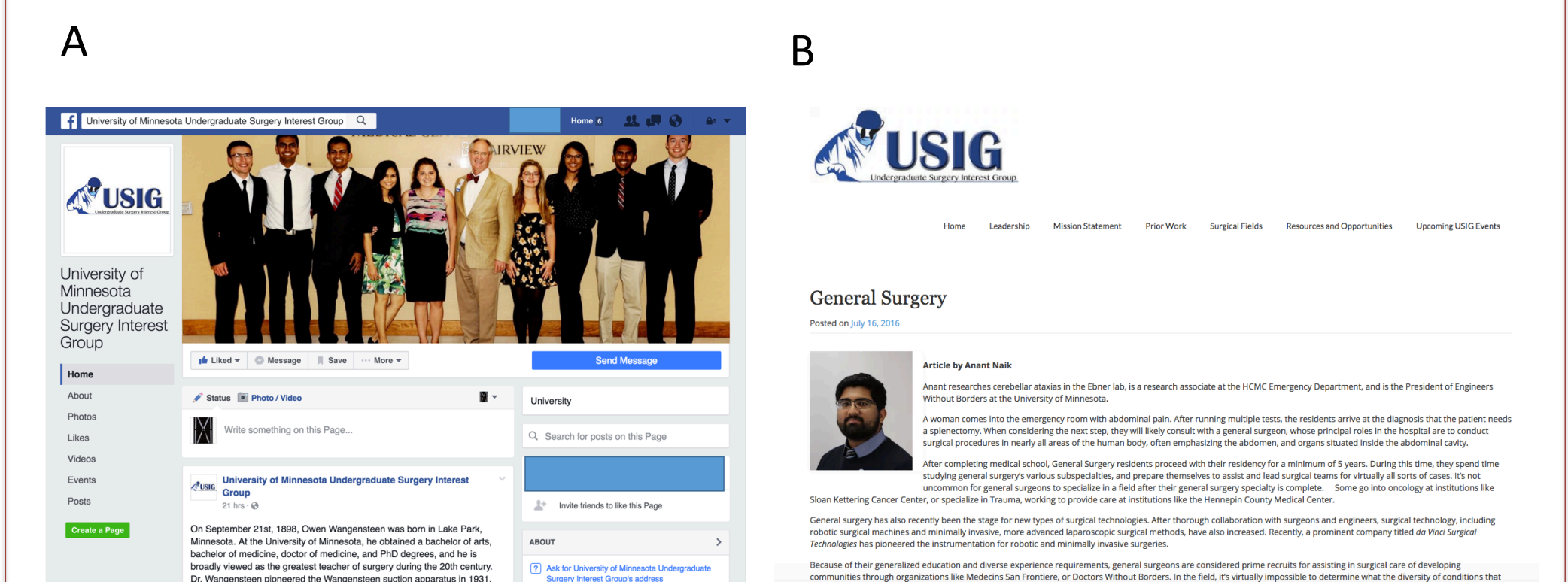


Figure 8. (A) USIG Facebook page, currently with approximately 325 'Likes.' (B) USIG website, currently with 14 member-written posts describing various surgical specialties.

USIG Leadership Presentations at Minnesota Surgical Society 2016 Conferences

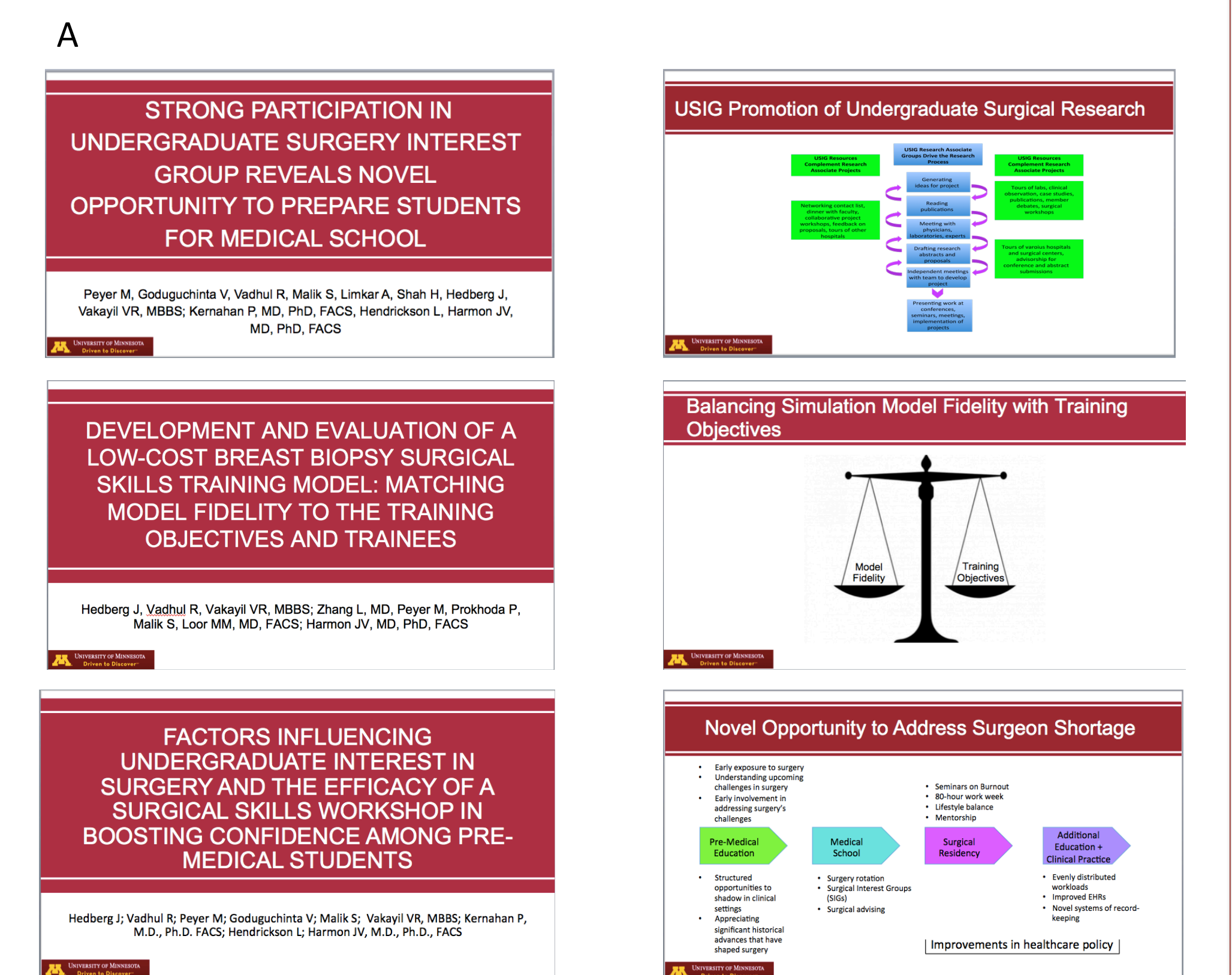


Figure 9. (A) Three USIG abstracts presented at Minnesota Surgical Society (MSS) 2016 conferences.

Conclusion

- USIG has received massive interest and participation in a short amount of time
- Faculty and resources were readily assembled for effective workshops and events
- USIG has potential to improve the abilities of future physicians and to create a future surgical workforce that is more resilient to attrition

Future Directions

- USIGs may be initiated at new universities with sufficient student interest and resources
- Study factors influencing surgical interest among pre-medical undergraduates
- Evaluate the impacts of USIG on members through long-term analyses of career choice and professional goals
- Expand the USIG curriculum and continue to improve surgical simulation models

References

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